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Filed : August 18, 2003

## REMARKS

Claims 113-119 are currently pending. Claims 1-112 are canceled.

### Rejections Under 35 U.S.C. §102

Claims 113-115 and 119 are rejected under 35 U.S.C. §102(b) as being anticipated by deBoer et al., U.S. Patent No. 5,117,769. Claims 113-117 and 119 are rejected under 35 U.S.C. §102(b) as being anticipated by Johnson et al. (GB 2181458). Applicants respectfully disagree that the Claims are anticipated by either deBoer et al. or Johnson et al.

deBoer et al. do not disclose or teach permitting gas to flow **through** the susceptor between regions above and below the susceptor, as recited in Claim 113. In deBoer et al., the susceptor 30 is not configured to allow gas to flow therethrough. The Examiner points to Fig. 2 and Col. 3, lines 48-57) of de Boer et al. and states that deBoer et al. disclose “gas flow through the susceptor between regions above and below the susceptor.” Applicants respectfully disagree that deBoer et al. disclose “gas flow through the susceptor between regions above and below the susceptor.” At Col. 3, lines 48-57, deBoer et al. teach flowing purge gas below the susceptor so that it “will inhibit the flow of reactant gas into the area below the susceptor and into the tubular shaft and thereby prevent deposited material contamination in those areas.” In deBoer et al., the gas does not flow **through** the susceptor, but merely below the susceptor to prevent the formation of hot spots in those areas. Claim 113 is therefore patentable as it is not anticipated by deBoer et al. Claims 114, 115, and 119 are also patentable over deBoer et al. because they depend from and include all of the limitations of Claim 113. Furthermore, each of the dependent claims recites further distinguishing features of particular utility.

Johnson et al. do not disclose or suggest supporting the susceptor on a plurality of support arms that extend generally radially outward and upward **from** an upper section of a substantially vertical shaft, a central vertical axis of the shaft being aligned with a central vertical axis of the susceptor, as recited in Claim 113. As shown in Fig. 4 of Johnson et al., the risers 81 do not extend radially outward and upward **from** an upper section of a substantially vertical shaft. The

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Johnson et al. risers 81 extend vertically upward from a horizontal portion of the pedestal 80, not from the vertical shaft of the pedestal 80. Claim 113 is therefore patentable as it is not anticipated by Johnson et al. Claims 114-117 and 119 are also patentable over deBoer et al. because they depend from and include all of the limitations of Claim 113. Furthermore, each of the dependent claims recites further distinguishing features of particular utility.

### **Rejections Under 35 U.S.C. §103**

Claims 116 and 117 are rejected under 35 U.S.C. §103(a) as being unpatentable over deBoer et al. in view of Yusuke Harada (JP 02243798). As noted above, de Boer et al. do not disclose or teach permitting gas to flow *through* the susceptor between regions above and below the susceptor, as recited in Claim 113. Although Harada does teach to flow purge gas through the susceptor, there is no motivation or suggestion provided in either reference to combine the references. Harada teaches to flow inert gas 39 through the susceptor 33 toward the rear surface of the wafer 32 to prevent reactant gas 40 from coming into contact with the rear surface of the wafer 32 because the rear surface of the wafer 32 is spaced apart from the susceptor 33 by the protrusion 34. It is due to this spacing that Harada is motivated to supply gas through the susceptor to prevent backside deposits, and this motivation is absent in the structure of de Boer et al. Furthermore, the Harada apparatus is not configured to rotate. deBoer et al. teach to support a substrate 32 *directly on* the susceptor 30 and to flow purge gas *below, not through*, the susceptor 30 to prevent contamination in those areas. deBoer et al. do not teach to flow purge gas through the susceptor to areas above the susceptor because they teach to support the substrate 32 *directly on* the susceptor 30. Therefore, there is no motivation to combine gas flow through the susceptor, as taught by Harada, with the deBoer et al. apparatus. Claims 116 and 117, which depend from and include all of the limitations of Claim 113, are therefore not obvious in view of deBoer et al. and Harada, either alone or in combination. Furthermore, each of the dependent claims recites further distinguishing features of particular utility.

Claims 113-117 and 119 are rejected under 35 U.S.C. §103(a) as being unpatentable over Ilya Perlov, U.S. Patent No. 5,421,893 and Yusuke Harada. Perlov does not teach or suggest permitting gas to flow *through* the susceptor between regions above and below the susceptor, as

recited in Claim 113. At Col. 4, lines 35-45, Perlov teaches to provide a frusto-conical pinhead 72 which fits snugly into a countersunk hole 74 to provide “a fairly good seal . . . thereby *preventing* processing gases from passing between the pin 66 and the interior walls of the hole 68 and burning the underside of the wafer 38.” Perlov therefore teaches away from allowing gases to flow *through* the susceptor, as recited in Claim 113. Thus, Perlov provides no motivation or suggestion for permitting gas to flow *through* the susceptor between regions above and below the susceptor, as recited in Claim 113. For the reasons discussed above, Claim 113 is patentable as it is not obvious in view of Perlov and Harada, either alone or in combination. Claims 114-117 and 119, which depend from and include all of the limitations of Claim 113, are therefore also patentable. Furthermore, each of the dependent claims recites further distinguishing features of particular utility.

Claim 118 is rejected under 35 U.S.C. §103(a) as being unpatentable over Johnson et al. in view of Hardy, U.S. Patent No. 5,343,012 or alternatively in view of Kazuo Kukazawa (JP 05013350). Claim 118 is also rejected under 35 U.S.C. §103(a) as being unpatentable over de Boer et al. in view of Yusuke Harada as applied to Claim 117 and further in view of Hardy et al. or alternatively in view of Kazuo Fukazawa. Claim 118 is also rejected under 35 U.S.C. §103(a) as being unpatentable over Perlov in view of Yusuke Harada as applied to Claims 113-117 and 119 and further in view of Hardy et al. or alternatively in view of Kazuo Fukazawa.

As noted above, Johnson et al. do not teach or suggest supporting the susceptor on a plurality of support arms that extend generally radially outward and upward *from* an upper section of a substantially vertical shaft, a central vertical axis of the shaft being aligned with a central vertical axis of the susceptor, as recited in Claim 113. Similarly, neither Hardy et al. nor Fukuzawa teaches or suggests supporting the susceptor on a plurality of support arms that extend generally radially outward and upward *from* an upper section of a substantially vertical shaft, a central vertical axis of the shaft being aligned with a central vertical axis of the susceptor. Claim 118, which depends from and includes all of the limitations of Claim 113, is therefore also patentable as it is not obvious in view of Johnson et al., Hardy et al., and Fukazawa, either alone or in combination. Claim 118 also recites further distinguishing features of particular utility.

As discussed above, there is no motivation to combine gas flow through the susceptor, as taught by Harada, with the deBoer et al. apparatus because deBoer et al. teach to support a

substrate 32 *directly on* the susceptor 30 and to flow purge gas *below, not through*, the susceptor 30 to prevent contamination in those areas. Neither Hardy et al. nor Fukazawa provides any motivation to flow gas *through* the susceptor of the type disclosed by deBoer et al. Claim 118, which depends from and includes all of the limitations of Claim 113, is therefore also patentable as it is not obvious in view of deBoer et al., Harada, Hardy et al., and Fukazawa, either alone or in combination. As noted above, Claim 118 also recites further distinguishing features of particular utility.

Also as discussed above, Perlov does not teach or suggest permitting gas to flow *through* the susceptor between regions above and below the susceptor, as recited in Claim 113. Instead, Perlov, teaches to prevent processing gases from passing through the susceptor. Thus, Perlov provides no motivation or suggestion for permitting gas to flow *through* the susceptor between regions above and below the susceptor, as recited in Claim 113. None of Harada, Hardy et al, nor Fukazawa provides and motivation or suggestion to provide the Perlov apparatus with gas passages in the susceptor to allow flow of gas therethrough. Claim 118, which depends from and includes all of the limitations of Claim 113, is therefore also patentable as it is not obvious in view of Perlov, Harada, Hardy et al., and Fukazawa, either alone or in combination. As noted above, Claim 118 also recites further distinguishing features of particular utility.

In summary, only Perlov and deBoer et al. teach support structures of the type recited, with a support "spider" having a plurality of support arms radiating upwardly and outwardly from a central shaft. The references contain no motivation to apply gas flow through a susceptor in conjunction with this type of support structure.

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**Conclusion**

Applicants respectfully submit that all of the pending claims are patentably distinguishable over the prior art of record. The cited references, either alone or in combination, do not teach or suggest Applicants' claimed invention.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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Dated: \_\_\_\_\_

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